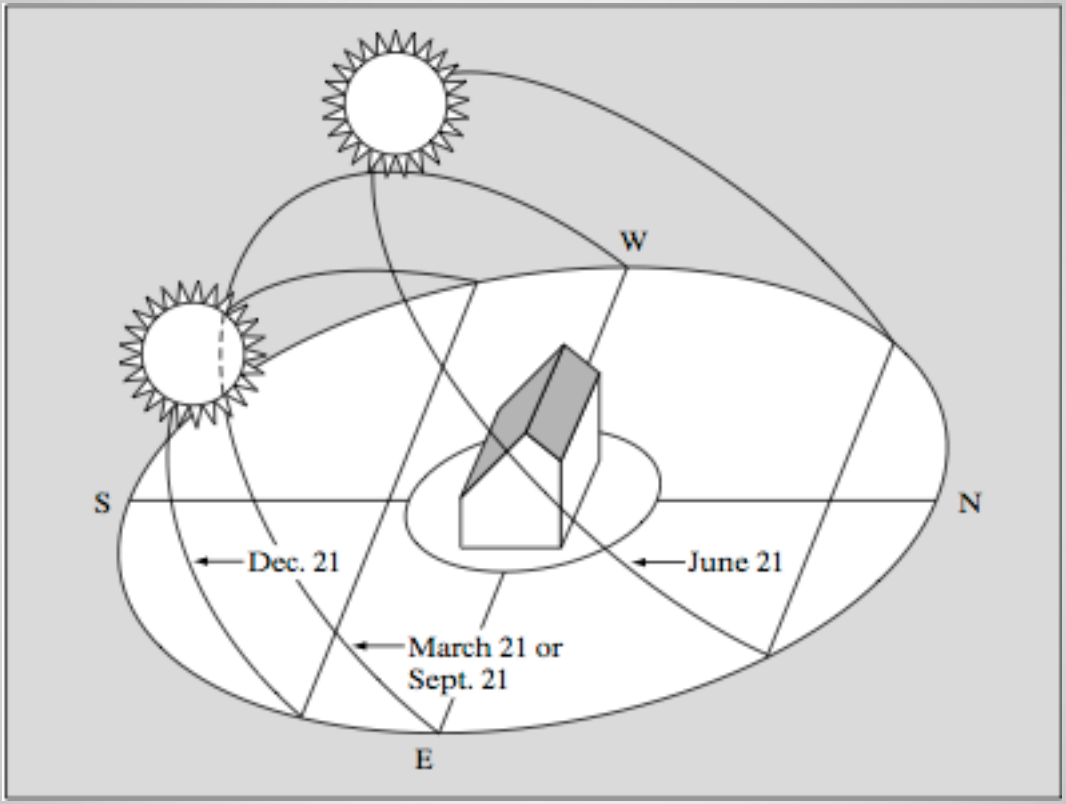
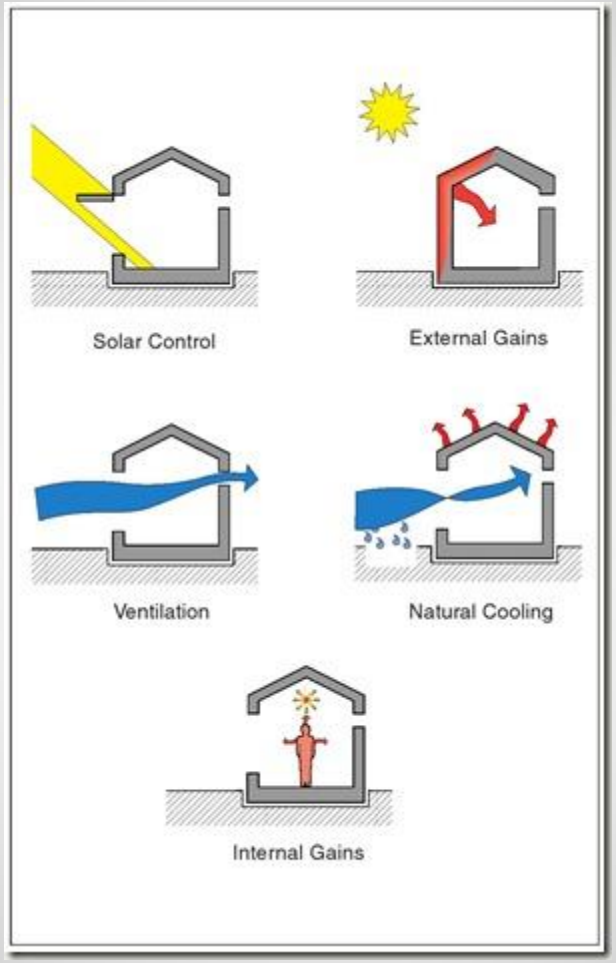
PASSIVE AND ACTIVE SOLAR ENERGY OPPORTUNITIES FOR YOUR HOME

WHERE IS THE SUN?

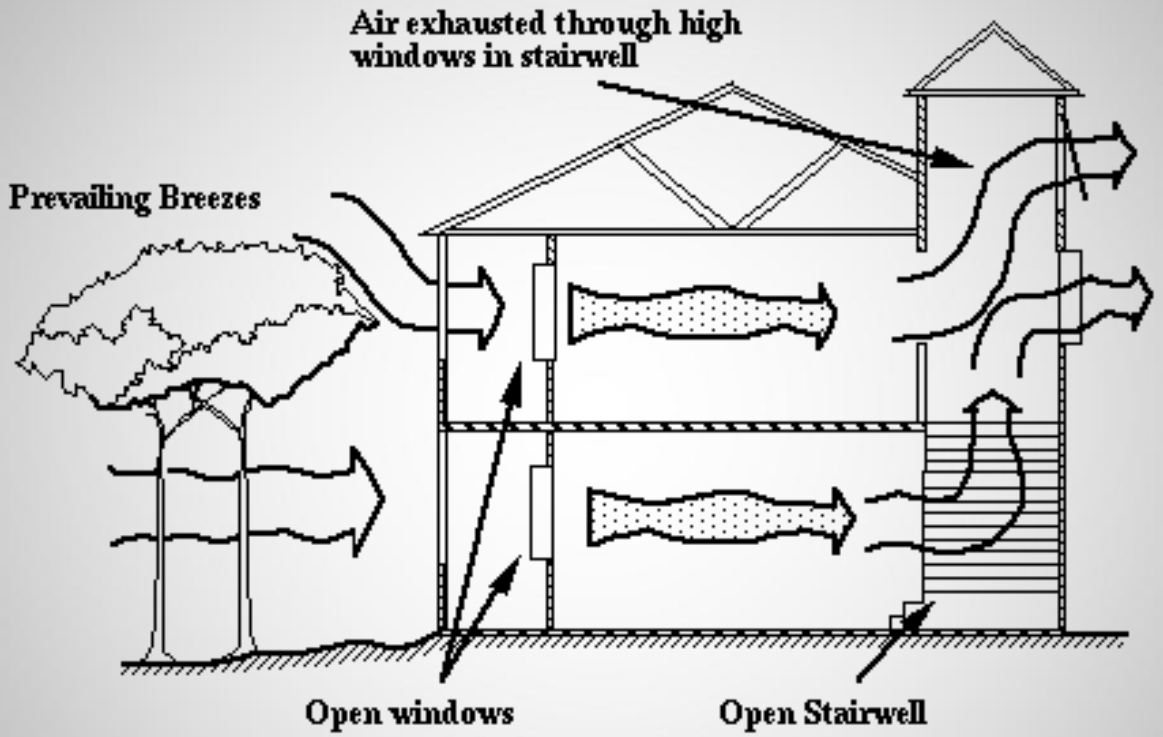
WHERE IS THE SUN?



WHAT ARE THE FORCES?



HOW ARE THEY USED?



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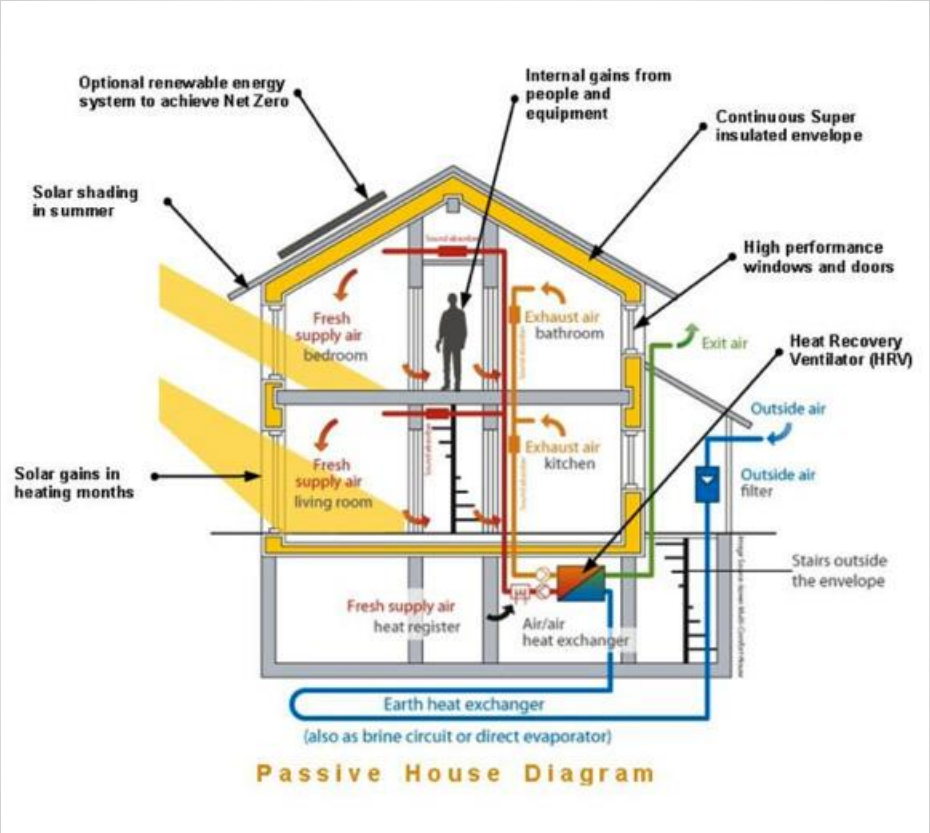
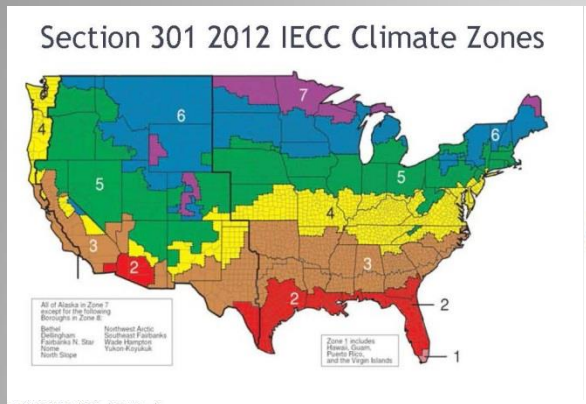


HOW ARE THEY USED?

ALBEDO, WATER, SHADE, NATURAL LIGHT

HOW ARE THEY USED?

HISTORIC CONTEXT: ALHAMBRA



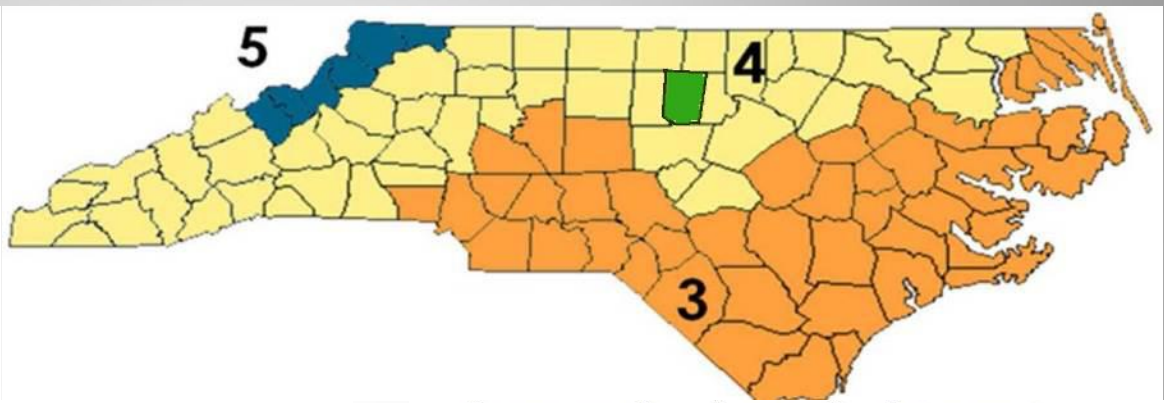
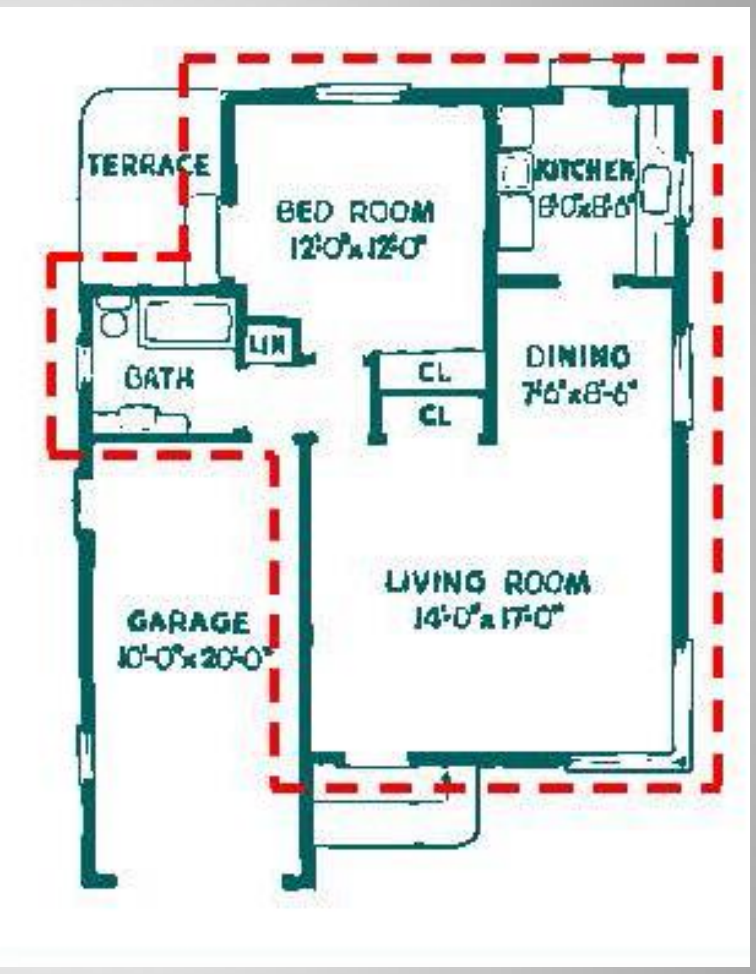


TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT

CLIMATE ZONE	FENESTRATION U-FACTORb	SKYLIGHT b U-FACTOR	GLAZED FENESTRATION SHGCb,~~c~~	CEILING R-VALUE k	WOOD FRAME WALL R-VALUEe	MASS WALL R-VALUEi	FLOOR R-VALUE	BASEMENTc WALL R-VALUE	SLABd R-VALUE & DEPTH	CRAWL SPACEc WALL R-VALUE
3	0.35	0.65	0.30	30	13	5/10	19	10/13f	0	5/13
4	0.35	0.60	0.30	38 or 30 cont. j	15, 13+2.5h	5/10	19	10/13	10	10/13
5	0.35	0.60	NR	38 or 30 cont. j	19, 13+5, or 15+3eh	13/17	30g	10/13	10	10/13

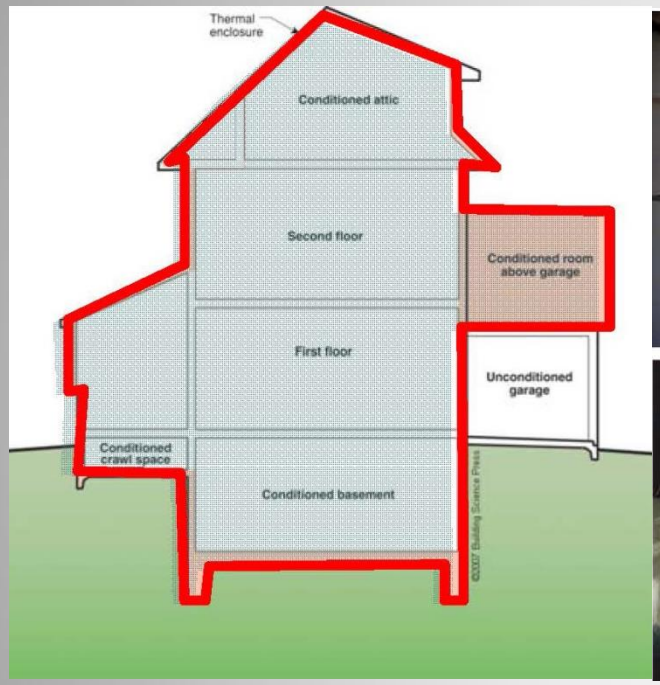
Common R-values - Resistance to Conductive Heat Flow

Concrete	0.2 per inch
½" Drywall	0.5
Double-paned glass	1.8
Low-e glass	about 3.0
Fiberglass insulation	3 to 4 per inch
Cellulose insulation	3.7 per inch
Expanded polystyrene	4 per inch
Extruded polystyrene	5 per inch
Icynene foam	3.6 to 3.7 per inch
Polyurethane foam	6.7 to 7.0 per inch



INSULATION IN PRACTICE

INSULATION IN THEORY



INSULATION IN THEORY

TYPICAL INSULATION TYPES

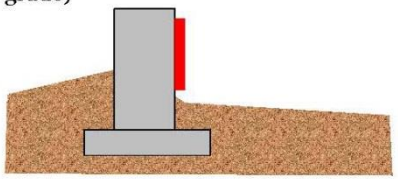
INSULATION IN PRACTICE

N1102.2.9 Closed Crawl space walls Cont.

Wall insulation requires that the exterior wall band joist area of the floor frame be insulated. Wall insulation shall begin 3 inches below the top of the masonry foundation wall and shall extend down to 3 inches above the top of the footing or concrete floor, 3 inches above the interior ground surface or 24 inches below the outside finished ground level, whichever is less.

N1102.2.9 Closed crawl space walls.

- Meet rules for closed crawl spaces
- 4" max gap at top and bottom (or at least 24" below grade)



Crawl Space Wall Insulation Allowances for Termite Treatment and Inspection

- 3" outside between top of insulation and bottom of siding
- 6" Below-grade treatment
- 3" top of insulation and bottom of sill

- 3" clearance/ wicking space between bottom of insulation and top of ground surface, footing or concrete floor

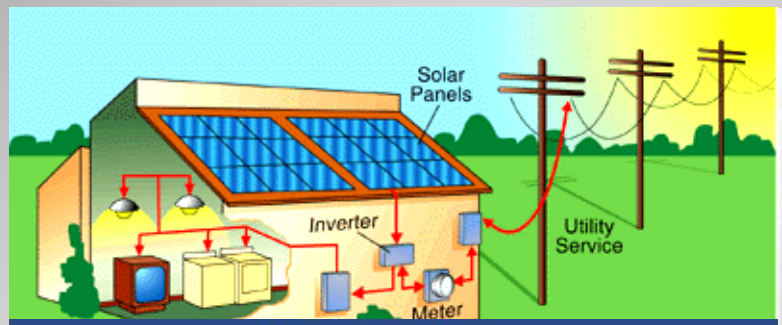
Unvented Crawlspaces - The Ground Cover is Key

Crawl Space Walls:

- Zone 3: R-5/ 13
- Zone 4: R-10/ 13
- Zone 5: R-10/ 13

INSULATION IN PRACTICE - SEALED CRAWLSPACE

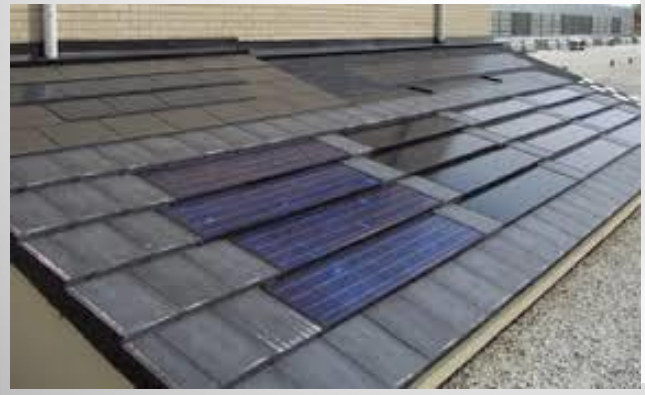
PVs IN PRACTICE



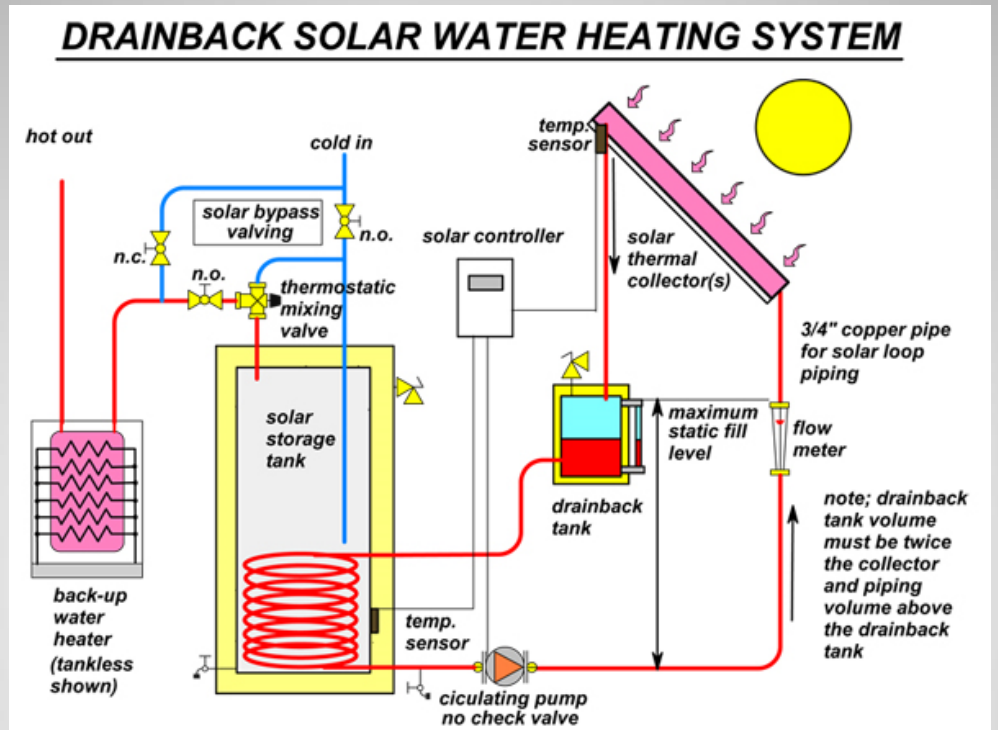
Roof Area Needed in Square Feet

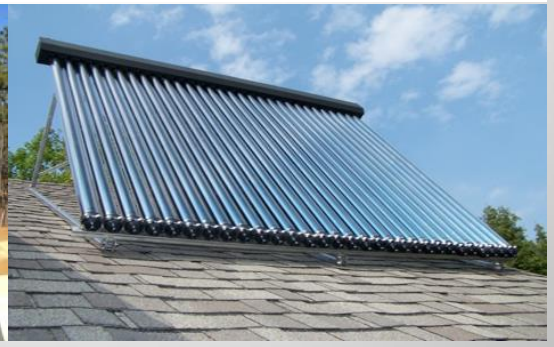
PV Module Efficiency (%)	PV Capacity Rating (Watts)						
	100	250	500	1,000	2,000	4,000	10,000
4	30	75	150	300	600	1,200	3,000
8	15	38	75	150	300	600	1,500
12	10	25	50	100	200	400	1,000
16	8	20	40	80	160	320	800

For example, to generate 2,000 watts from a 12%-efficient system, you need 200 square feet of roof area.



THE COMPONENTS





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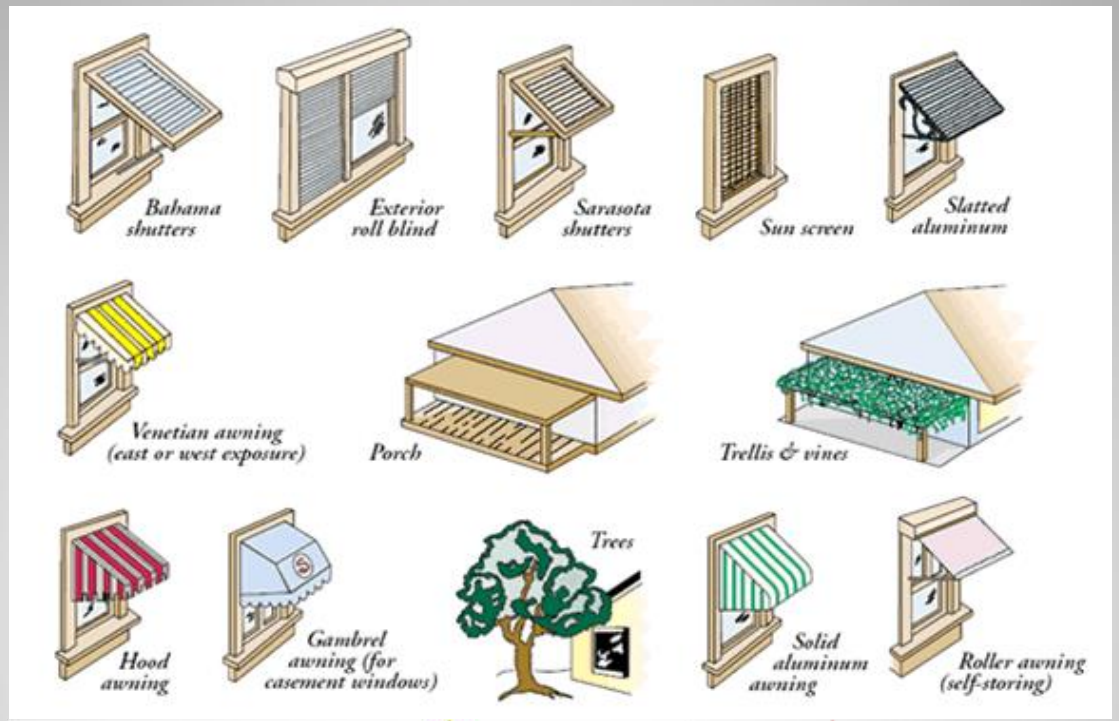
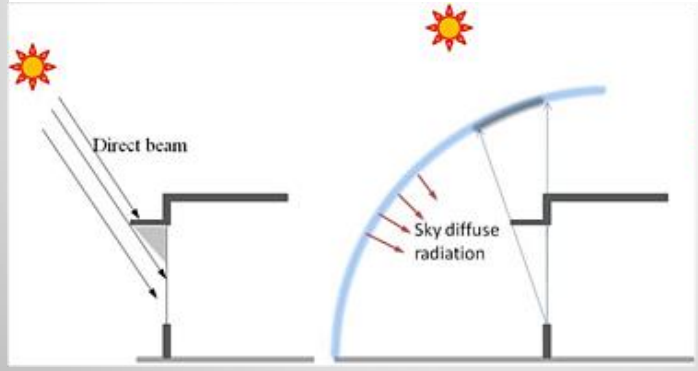
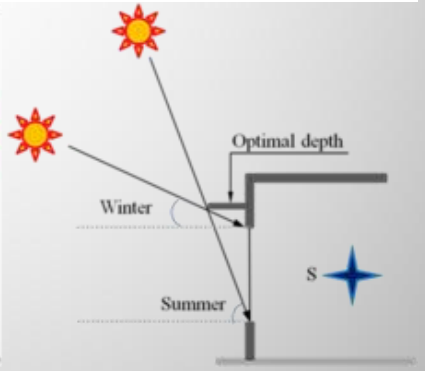
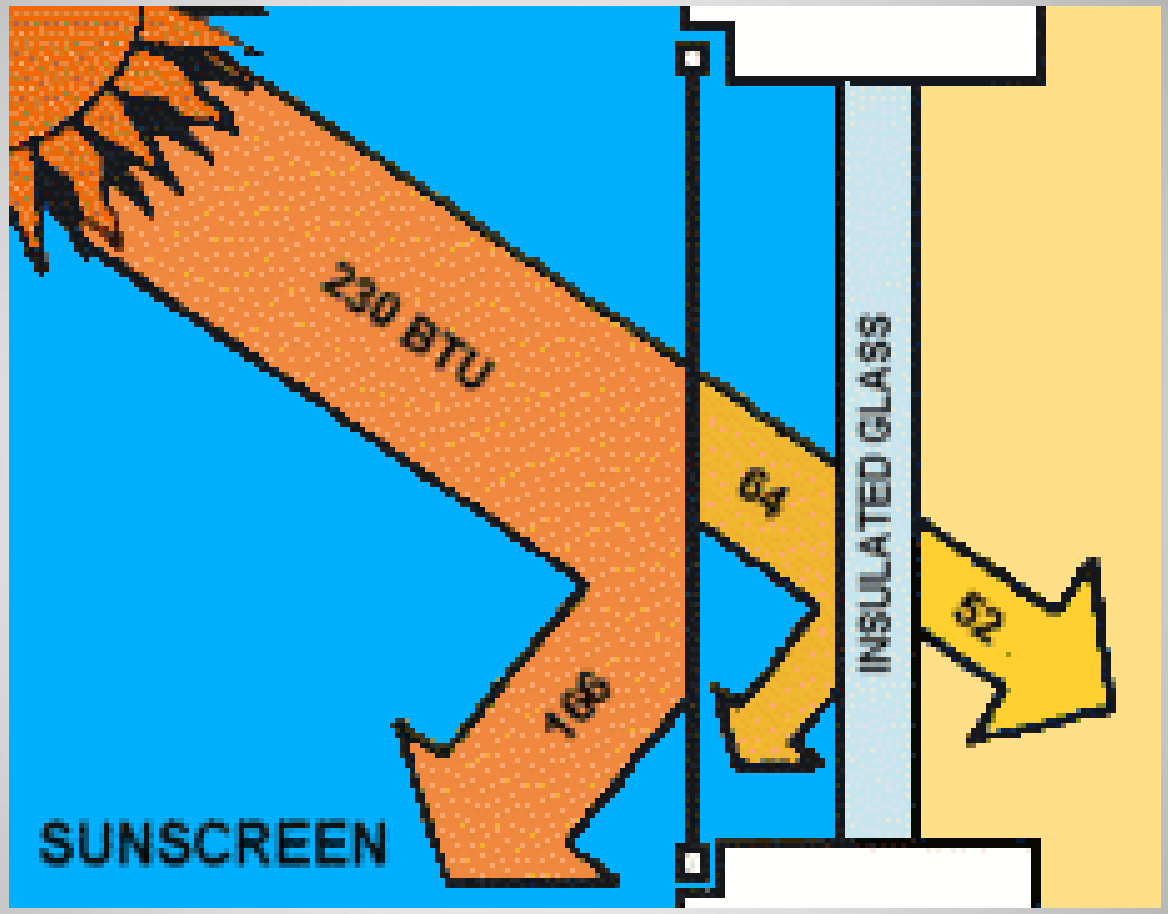


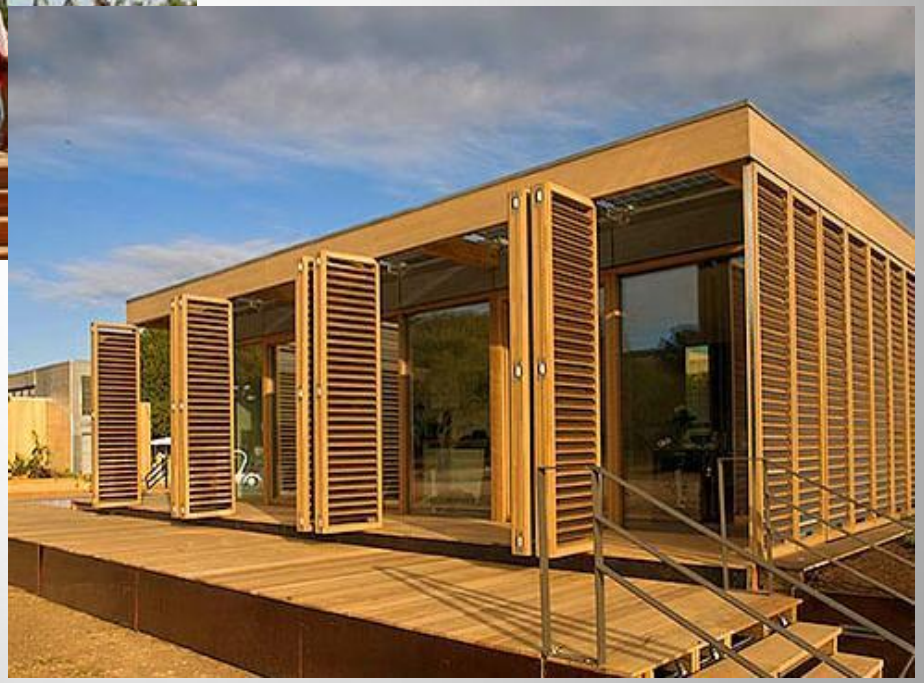




IT'S NOT NEW STUFF



EXTERIOOR SCREENS



CONTEMPORARY SYSTEMS

SOLAR SHADING

USED IN TRADITIONAL DESIGN

SOLAR SHADING

USED IN CONTEMPORARY DESIGN